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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,599

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Olivier Rosec

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3383

466 7590 12/01/2009  
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EXAMINER

CHAWAN, VIJAY B

ART UNIT

PAPER NUMBER

2626

NOTIFICATION DATE

DELIVERY MODE

12/01/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DocketingDept@young-thompson.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/591,599	<b>Applicant(s)</b> ROSEC ET AL.	
	<b>Examiner</b> Vijay B. Chawan	<b>Art Unit</b> 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Specification***

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

#### **Content of Specification**

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and

descriptive, preferably from two to seven words may not contain more than 500 characters.

- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).
- (e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.
- (f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
  - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."
  - (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in

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general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

- (h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.
- (j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).
- (k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).
- (l) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Duxans et al., (“Estimation of GMM in voice conversion including unaligned data”, Proceedings of Eurospeech 2003 Conference, September 2003, pages 861-864).

As per claim 1, Duxans et al., teach a method for converting a voice signal (60) delivered by a source speaker into a converted voice signal (70) having acoustic features resembling those of a target speaker, comprising: the determination (1) of at least one function for transforming acoustic features of the source speaker into acoustic features similar to those of the target speaker, using voice samples from the source and target speakers; and the transformation (2) of acoustic features of the source speaker voice signal to be converted by applying the at least one transformation function, characterized in that the transformation (2) comprises a step (44) for applying only a determined part of at least one transformation function to the signal to be converted (Introduction, Sections 2 and 3).

As per claim 2, Duxans et al., teach the method according to claim 1, characterized in that the determination (1) of at least one transformation function comprises a step (20) for determining a model representing in a weighted manner common acoustic features of voice samples from the target speaker and from the

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source speaker on a finite set of model components, and in that the transformation (2) comprises: a step (36) for analyzing the voice signal to be converted, which voice signal being grouped into frames, in order to obtain, for each frame of samples, information relating to the acoustic features; a step (38) for determining an index of correspondence between the frames to be converted and each component of the model; and a step (40) for selecting a determined part of the components of the model according to the correspondence indices, the step (44) for applying only a determined part of at least one transformation function comprising the application to the frames to be converted of the sole part of the at least one transformation function corresponding to the selected components of the model (Introduction, Sections 2 and 3).

As per claim 3, Duxans et al., teach the method according to claim 2, characterized in that it additionally comprises a step (42) for normalizing each of the correspondence indices of the selected components with respect to the sum of all the correspondence indices of the selected components (Introduction, Sections 2 and 3).

As per claim 4, Duxans et al., teach the method according to claim 2, characterized in that it additionally comprises a step (43) for storing the correspondence indices and the determined part of the model components, performed before the transformation step (44), which is delayed in time (Introduction, Sections 2 and 3).

As per claim 5, Duxans et al., teach the method according to claim 2, characterized in that the determination (1) of the at least one transformation function comprises: a step (4X, 4Y) for analyzing voice samples from the source and target speakers, grouped into frames in order to obtain acoustic features for each frame of

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samples from a speaker; a step (18) for the time alignment of the acoustic features of the source speaker with the acoustic features of the target speaker, this step (18) being performed before the step (20) for determining a model (Introduction, Sections 2 and 3).

As per claim 6, Duxans et al., teach the method according to claim 2, characterized in that the step (20) for determining a model corresponds to the determination of a Gaussian probability density mixture model (Section 2).

As per claim 7, Duxans et al., teach the method according to claim 6, characterized in that the step (20) for determining a model comprises: a sub-step (22) for determining a model corresponding to a Gaussian probability density mixture, and a sub-step (24) for estimating parameters of the Gaussian probability density mixture from the estimation of the maximum likelihood between the acoustic features of the samples from the source and target speakers and the model (Sections 2 and 3).

As per claim 8, Duxans et al., teach the method according to claim 1, characterized in that the determination (1) of at least one transformation function is performed based on an estimator of the realization of the acoustic features of the target speaker given the acoustic features of the source speaker (Sections 2 and 3).

As per claim 9, Duxans et al., teach the method according to claim 8, characterized in that the estimator is formed by the conditional expectation of the realization of the acoustic features of the target speaker given the realization of the acoustic features of the source speaker (Sections 2 and 3).



As per claim 10, Duxans et al., teach the method according to claim 1, characterized in that it additionally includes a synthesis step (48) for forming a converted voice signal from the transformed acoustic information (Sections 2 and 3).

As per claim 13, Duxans et al., teach the method according to claim 3, characterized in that it additionally comprises a step (43) for storing the correspondence indices and the determined part of the model components, performed before the transformation step (44), which is delayed in time (Sections 2 and 3).

As per claim 14, Duxans et al., teach the method according to claim 3, characterized in that the determination (1) of the at least one transformation function comprises: a step (4X, 4Y) for analyzing voice samples from the source and target speakers, grouped into frames in order to obtain acoustic features for each frame of samples from a speaker; a step (18) for the time alignment of the acoustic features of the source speaker with the acoustic features of the target speaker, this step (18) being performed before the step (20) for determining a model (Sections 2 and 3).

As per claim 15, Duxans et al., teach the method according to claim 4, characterized in that the determination (1) of the at least one transformation function comprises: a step (4X, 4Y) for analyzing voice samples from the source and target speakers, grouped into frames in order to obtain acoustic features for each frame of samples from a speaker; a step (18) for the time alignment of the acoustic features of the source speaker with the acoustic features of the target speaker, this step (18) being performed before the step (20) for determining a model (Sections 2 and 3).

As per claim 16, Duxans et al., teach the method according to claim 3, characterized in that the step (20) for determining a model corresponds to the determination of a Gaussian probability density mixture model (Section 2).

As per claim 17, Duxans et al., teach the method according to claim 4, characterized in that the step (20) for determining a model corresponds to the determination of a Gaussian probability density mixture model (Section 2).

Claims 11-12 are system claims similar in scope and content of the method claims 1-2, and are rejected under similar rationale.

### ***Conclusion***

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please see attached PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vijay B. Chawan whose telephone number is (571) 272-7601. The examiner can normally be reached on Monday Through Friday 6:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Vijay B. Chawan/  
Primary Examiner, Art Unit 2626

vbc  
11/27/09